



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: David C. Morris **Group Art Unit:** 3745
Serial No.: 09/328,931 **Examiner:** C. Verdier
Filed: 06/09/1999 **Attorney Docket:** MO1.003
Title: HELICOPTER BLADE ASSEMBLY ADAPTED TO PERMIT
RAPID FORWARD FLIGHT

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DECLARATION UNDER §1.132

I have examined the subject concept and provide the following comments:

10 During rapid forward flight the blade assembly of the invention operates in a different manner from that of a standard helicopter.

The standard helicopter works in such a manner that each rotating blade is at an angle of attack relative to the disc swept by its blades and provides lift.

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In the invention however the blades are not at an angle of attack relative to the disk swept by its blades. However the disc is at an angle of attack with respect to the forward velocity. At sufficiently high rotation rates, air flows over a virtual disk created by the rotation of the blade assembly to create lift. Lift is generated due to the angle of attack of the total disc, not the angle of attack of each blade as with a helicopter.

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Lift will be generated as a function of speed of rotation, angle of attack of the virtual disk and forward speed.

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Richard H. Miller

September 3, 2001

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I have reviewed the concept presented by Mr. David C. Morris and have concluded that for his invention lift is generated in proportion to the speed of rotation and to the angle of attack of the virtual disk. It does not depend upon the angle of attack of individual blades.

During rapid forward flight the blade assembly of the invention operates in a fundamentally different manner from that of a standard helicopter. The standard helicopter works in such a manner that each rotating blade cuts through the air with a sufficient angle of attack as to provide lift. In the invention, however, (at sufficiently high rates of rotation), air flows over a virtual disk created by the rotation of the blade assembly to create lift: the individual blades do not have a positive angle of attack

In addition, between standard blade performance and the virtual lifting disk concept: advancing and retreating blade speeds will have no effect on ultimate forward speed as they do on the forward speed of standard helicopters. Fast forward flight would be a feature of the invention.

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